MALIGNANT NEWGROWTH IN CHILDHOOD.

I. MALIGNANT DISEASE OF THE UTERUS, OVARY, AND VAGINA IN CHILDREN.[1]

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Reviewing the literature of malignant newgrowths in children one is struck with the increasing frequency with which diseases of the genital organs in children are being recorded. About twenty years ago, when I commenced to call attention to malignant diseases of the pelvic organs in female children, the references to be found in the literature were few indeed. I now make a special plea for the early recognition of malignant diseases in children. These diseases are no longer medical curiosities, but will be seen by all of us if they are looked for with care and intelligence. It is the early recognition that they need, because with early recognition early radical treatment will reduce the present rather apalling mortality. I make this appeal to the general practitioner; it is to him that we must look for any advances in our knowledge and treatment of these diseases. He has the first chance, and upon his diagnostic skill and acumen depends our ability to classify, study, and successfully treat the little sufferers.

Anyone who is specially engaged in the study of pediatrics will agree with the statement that female children, even young infants, are subject to the same affections of the genital organs that are found in adult females; in fact, they are probably more prone to at least one of them, notably gonorrhœa. We must also remember that many diseased states brought to our attention by adult women have their etiology in conditions which existed long before puberty was established. We rarely discover malformations of the genital tract in children, but they are studied with great ease in the adult. Salpingitis and localized peritonitis are rather frequent in little girls. Marx[2] reports the postmortem examination of fifteen children who had symptoms of salpingo-oöphoritis similar to those found in the adult. In five of them the Fallopian tubes contained pus and their uterine attachments were sealed.

The examination of a child, no matter how young it may be, for the detection of malignant disease, is in all respects similar to that of the adult, except the vaginal and bimanual examination. We rarely examine young children by the vagina; in fact, it is hardly justifiable, unless the disease is manifestly vaginal or a vaginal discharge is evident. When it is necessary to examine the vagina of a young child, the cystoscope of Kelly, No. 8, 9, or 10, as suggested by himself, will be found the most available instrument. It is introduced with great ease and little pain if cocaine has been used; the child soon gets used to it, and if necessary applications of remedial drugs may be made to the different areas. The knee-chest position is of great value in making these examinations; of course, the usual dorsal position is of great value, but in children it is less valuable than in the adult. Of greatest value of all in children is the rectal examination; a combined rectal and bimanual examination is ideal, no matter how young the child may be. If this be made a matter of routine, we shall be surprised how often grave disease is detected in these little bodies. Some years ago Carpenter, of London, was the anesthetizer for an examination of a case in obstinate constipation in a little girl which had resisted all usual methods of treatment. The examination was carried out by means of the rectal and abdominal method and a myeloid sarcoma growing from the anterior surface of the sacrum was found to be the cause of the obstinate constipation.

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[1] Read by invitation at a meeting of the California Academy of Medicine, San Francisco, October 22, 1908.

[2] Gaz. de gynec., November 15, 1895.

In young children, from birth to the fifth year, the relatively greater length of the examining finger in comparison with the small pelvis and small abdominal cavity permits wide excursions over practically all of the pelvis and almost the entire abdomen. Of course as the child grows older this examination is of less value, because the size of the body now nearly approaches that of the adult. The rectal examination is best made under an anesthetic; this may not always be necessary, but a gynecological examination in a resisting child is devoid of value. The child is placed in the dorsal position, the legs are flexed on the thighs and the thighs on the abdomen. The pelvis is elevated as for a cystoscopic examination. The examiner now places the left hand on the abdomen and the right index finger in the rectum. A routine examination is now made first of the left side of the pelvis and abdominal cavity and then to the right up to or above the level of the umbilicus, which can usually be reached with great ease. Any abnormal growth not only in the sexual organs and abdominal viscera, but in the intestines and retroperitoneal structures, may be readily recognized.

In little children the finger in the rectum and the hand on the abdominal wall are separated only by the thickness of the comparatively thin walls of the child's abdomen, and a growth can be outlined with startling exactness. The iliac, hypogastric, and umbilical regions are within one's grasp; the important regions of the appendix and the contiguous structures are almost within one's hand, and we can at once recognize the so-called intestinal matting; even a slight degree of peritonitis, just sufficient to agglutinate the omentum, may be recognized by the combined examination in experienced hands, particularly those hands that have learned to know that when peritonitis is present the intestines move en masse, as it were, and do not quickly glide under the fingers as the healthy gut will.

A note of warning must be sounded here in regard to the danger of mistaking a partially filled bladder for a tumor or a peritoneal exudation. The means of guarding against this error is self-evident; I only mention it because those of us who are teaching sometimes see the younger practitioner fall into error. We must also guard against mistaking a pus collection or serous accumulation for a filled bladder.

Let us for a moment consider the anatomical peculiarities of the female pelvic organs in children. The sacrum and in consequence the rectum are almost straight. One will miss the well-known hollow of the sacrum, and the large lax ampullar distention does not exist. In young children, those who have not walked much, the bladder is about the size and shape of an egg, the base downward, and its site is almost purely abdominal. As the child walks more the bladder sinks lower in the pelvis, but until about puberty it can readily be displaced into the abdominal cavity by an examining finger, so loose is its attachment. The infantile uterus has but little body; it is practically a thin cord made up mostly of the cervix which at first appears unduly bulky. It lies comparatively high in the pelvis, but can be rolled between the fingers and the symphysis pubis. In young children the ovaries are at the side of the pelvis close to the external iliac artery: the pulsation of this vessel is one of the guides for their location, the other being the sickle-shaped uterosacral ligaments. It is to be understood that these landmarks are subject to as many variations in the child as in the adult. The usual variation is a higher location, but we must remember those cases of congenital prolapse of the uterus to which I have called attention,[3] and we must distinguish this prolapse from congenital hypertrophic elongation of the cervix. The prolapse may be of any degree, and is usually without marked symptoms; indeed, some of the children have performed the functions of the bladder and rectum in a normal manner. These cases of congenital prolapse are likely to be associated with lumbosacral spina bifida and rectal ectropion, often with clubbed feet, sometimes with hydrocephalus and hypertrichosis.

Other causative factors have been thought to be an abnormally large size of the pelvis, an enlargement of the uterine body or cervix or of the entire organ, and increased abdominal pressure; such a case for example as that of Stepkowski,[4] who saw a woman, aged twenty-five years, with complete prolapse of the uterus and vagina which was caused by excessive vomiting when she was but thirteen years of age, and that of Karczewski,[5] who saw a girl, aged thirteen years, with complete procedentia developing gradually from carrying heavy burdens. Uterine displacement other than prolapse also occurs in very young children. Spencer[6] reports a case of retroflexion of the uterus in a newborn child, and Berli,[7] one of congenital displacement in the newborn. Carpenter,[8] who was one of the pioneers in the rectal examination of children, says that a uterus in a child, aged about two years, is an inch long and an inch broad at the fundus, the tubes about one and three-fourths inches, the right ovary five-eighths inch in length, and the left one-half inch in length, and each about one-sixth inch in diameter. The ovaries vary from five-sixteenths inch long by one-fourth inch broad in a child a few weeks old. The organs measure one and one-half inches by one-half inch in a child approaching puberty. Ovaries show some variations in size in children of similar ages. One ovary is not infrequently decidedly larger than its fellow. The Fallopian tubes for clinical purposes are about equal to the vas at a similar age, at their narrowest part, but they gradually enlarge as they pass along to the fimbriated extremity; in length they vary from a little over one inch to a little over three inches, according to age.

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[3] Cyclopedia of the Diseases of Children, Keating and Edwards.

[4] Gaz. lek in Przegl. Chir., la Gynic., 1897, No. 1.

As I have already stated, the two anatomical aids to the recognition of these structures when examining by the rectum are the iliac arteries and the uterosacral ligaments. These ligaments, as Keating and I showed many years ago, form a curve surrounding the rectum in children, and when the finger is introduced and passed gently upward their sharp edge is readily recognized. Following up this edge we surely come to both the tube and the ovary which can be outlined by pressing toward the bony wall of the pelvis. The ureters are also palpable under the same guidance; in this way an impacted calculus has been detected in a tuberculous ureter in a child.

In examining children we must ever bear in mind that displacements of the ovaries and tubes into the inguinal or crural openings are not extremely unusual, and if we find difficulty in locating them in the pelvis, these latter structures, the navel, the ischiadic, and obturator foramina should be examined; it is well also to remember that these prolapsed ovaries may be cystic and cause considerable difficulty in diagnosis.

Diseases of the uterus, tubes, ovaries, and vagina in childhood are far more frequent than is generally supposed by those who have not given special attention to the study of those diseases in the very young. Even as late as 1888 no less an authority than Lusk[9] wrote that no case of uterine sarcoma is known to have occurred previous to puberty, a statement as incorrect then as it is now. The literature on this subject, for the most part, is scattered throughout periodical publications, but of recent years Howard A. Kelly and I have made an attempt to consolidate these scattered publications into standard text-books.[10]

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[5] Gaz. lek in Przegl. Chir., la Gynic., 1897, No. 1.

[6] Trans. Obstet. Soc., London, 1892-93, xxxiv, 25 to 28.

[7] Univ. Med. Mag., 1893-94, vi, 185.

[8] Pediatrics, 1896, i, 481

[9] American System of Gynecology.

To show the frequency of pelvic disease in children it is only necessary to say that Bland Sutton has recently collected one hundred cases of ovariotomies performed on children under sixteen years of age. Weil[11] has added sixty cases under ten years of age, and I have over 275 references to pelvic and abdominal diseases in little children. But to those of us who have engaged in this study for a number of years, the manner in which writers report their cases is extremely disappointing, when we are endeavoring to elucidate new facts. Because pediatrics as a special department is new, it is most important to record every detail in the clinical history and in the operative procedures, but most important of all is the later history of the patient, as by this knowledge alone shall we be able to formulate the factors upon which to base reliable conclusions both as to the immediate prognosis and the expectancy.

An interesting point is that all forms of diseases of the adult female pelvis have been recorded in childhood. Again, in the child certain growths seem to have certain selective age periods: sarcoma and dermoids usually occur under the third year; and ovarian cysts become more frequent about puberty, although they are seen at all ages, even from the earliest infancy. Chiene[12] removed one at the early age of three months; Boullard[13] saw a newborn infant in whom both ovaries contained a large number of cysts; Schultz[14] saw an ovarian cyst in a still-born child; Doran[15] reported proliferating cysts in the ovary in a seven-months fœtus; and Lederer[16] operated upon a fifteen-weeks-old infant for cystic degeneration of the left ovary and in addition found the right ovary in the inguinal canal. Some very early successful cases of removal of sarcoma of the ovary are recorded: Harris,[17] for example, removed such a tumor in a child, aged twenty-two months; Hoffman's[18] patient was aged thirty-three months (fatal result); Cameron's[19] was forty months old (also fatal result). Byford[20] had a successful case at the age of four years and eight months. Altogether a large number of sarcomatous ovaries have been observed and recorded in children from an early age up to about the eighteenth year (see Tables I and II)—a later age excluding their study for this paper. Nor is carcinoma of these structures unknown during the earlier years of life: Brown[21] reports one encephaloid disease of the right ovary in a child (age not stated); Marjolin's[22] remarkable case was aged but one year, but had a very large cancerous tumor. Weil[23] reports an adenocarcinoma of the left ovary in a girl, aged five years. The ovary was the size of a large cocoanut, freely movable, and was removed with the left tube without any hemorrhage. The child made a remarkable recovery. Stolypinsky[24] reports a carcinoma of the ovary in a girl, aged eight years; Leopold[25] one in a girl aged nine years; Corse[26] one involving the uterus and ovaries in a girl, aged twelve years, and Michel[27] removed by operation a carcinoma of the ovary that was the size of a man's head, in a girl aged sixteen years. In two years she died of recurrence. At autopsy a large tumor in the left side of the abdomen was found, with metastasis to the liver and kidneys, but most interesting of all is the fact that the microscope showed the tumor to have a chorion-epithelioma-like structure.

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[10] Cyclopedia of Diseases of Children, Keating and Edwards, first, second, and third editions, 1889 to 1901, J. B. Lippincott Co., Philadelphia, Pa.; Gynecology and Abdominal Surgery, Kelly and Noble, vol. i, p. 809, W. B. Saunders & Co., 1907, Philadelphia, Pa.

[11] Johns Hopkins Hospital Bulletin, March, 1905, xvi, No. 168.

[12] Edin. Med. Jour., June, 1884.

[13] Bull. soc. anat. de Paris, 1854, xxix, 15.

[14] Verhandl. d. Gesellsch. f. Geburtsch. in Berlin (1857–58), 1859, xi, 55 to 57.

[15] Proc. Path. Soc. London, 1880–81, xxxii, 147 to 150.

[16] Allg. Wein. Med. Zgt., 1895, x, 253.

[17] Amer. Jour. Obst., October, 1904, 530.

[18] Ibid., xxxvi.

[19] Glasgow Med. Jour., 1889.

[20] Chicago Med. Record, 1891–92, ii.

Many more instances of the early involvement of the ovary by malignant disease could be cited from the literature, but sufficient has been given to make good my contention that the disease can no longer be considered extremely rare, even at the very early periods of life.

Let me briefly consider the clinical modification in the disease due to the tender age of the subject. The age, by the way, is absolutely no contra-indication to operation. It is true that the very young do not stand this sort of surgery as well as the very old; nevertheless their resistance is surprisingly good and sufficiently reliable to warrant extensive surgery in the face of malignant involvement of removable structures. Malignant ovarian tumors are more common in children than in very old women; of these, the ovarian dermoids and sarcomas are perhaps the most frequent. We must not forget the presence of carcinoma at this period of life. Many of the earlier cases are no doubt rather carelessly worked out in regard to the microscopic diagnosis. Cullen says that adenocarcinoma of the ovary is extremely deceptive unless many sections from the various parts of the growth are examined and then it will be found that the advancing edges are most characteristic of the carcinomatous arrangement.

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[21] Lancet, London, 1858, i, 456.

[22] Bull. soc. de chir. de Paris (1860), 1861, 2 s. 1, 667–72.

[23] Ibid.

[24] Rev. de gynecol. et de chir. abd., viii, 708.

[25] Centralbl. f. Gyn., 1874, xviii.

[26] Trans. Coll. Phys., Philadelphia (1856–62), 1863, n. s., iii, 336

[27] Zentralbl. f. Gynäk., 1905, No. 14.

The symptoms of a malignant pelvic growth in a child are very likely, in my experience, to be extremely indefinite. Certainly this is so in the earlier stages and in the two cases of which I have notes, the sarcoma of the ovary had reached such a size as to be noticeable externally and the parents discussed the change of contour in the abdominal segment; but the children denied all abnormal abdominal sensations. Neither of these children had emaciated at all, and were brought to me because they had a large growing abdomen.

If we are unable to satisfy ourselves that the diagnosis is complete and that malignant disease or other serious pelvic abnormalities do not exist, there can be no possible objection to an exploratory incision in the child when life seems threatened by an abdominal growth. If possible, one should remove the growth at this time; if not, the simple incision carefully made and carefully attended to afterward does not add to the danger of the already existing disease. I always prefer the median incision in children, made one inch above the symphysis pubis and extending upward one and one-half to two inches.

This incision renders all the organs accessible, and its closure is perhaps less subject to hernial complications. The peritoneum in the child is a very delicate membrane; it should be picked up in a fold and very slightly nicked, when air will enter the general cavity and the incision may be cautiously enlarged. It may be torn the full length of the incision, but I prefer the use of scissors. The entire pelvis, contiguous and related organs, should be carefully and systematically explored. My rule has been the uterus first, because it is more readily recognized, then the right and the left palpation of ovaries, tubes, broad ligaments, ureters, kidneys, and appendix. This can be very gently and quickly done in the child, and with but little manipulation, so accessible are the organs. Of course, very simple means should be employed first, but I never hesitate to advise exploratory incision if the diagnosis is not perfectly clear or if there is any question at all of malignancy.

In the child, unlike the adult, the abnormal pelvic conditions are always of a serious nature. An abdominal tumor in a child is likely to be either a dermoid cyst, sarcoma, or adenocarcinoma of the ovaries, malignant or cystic renal diseases, or certain somewhat rare and atypical retroperitoneal renal disorders. So we must of necessity look upon the presence of an abdominal tumor in a child as of serious import, and exhaust all methods of arriving at an accurate diagnosis.

Henning's[23] treatise, written nearly thirty years ago, is still the best on the diseases of the female sexual organs in children. He tells us that dermoid cysts are apt to be carried into the years of puberty, on account of their slow growth and lack of early symptoms;

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[23] Gerhardt's Handbuch der Kinderkrankheiten.

TABLE I.—Malignant Disease of the Ovary in Children.

Reporter	Age	Tumor	Remarks	Reference
Doran	7 mos. fœtus	Cancer	....	Trans. Path. Soc., London, 1882
von Franqué	fœtus	Sarcoma	....	Weil; Johns Hopkins Hosp. Bull., March, 1905, No. 168
Hollander	9 mos.	Spindle- and round-cell sarcoma	Operation: recovery. This case appears also in Table II	Deut. med. Woch. Vereins, Beilage, 1896, xxii, 16; Ped. 1896, ii
Marjolin	1 yr.	Cancer of ovary	Very large	Bull. soc. de chir. de Paris (1860) 1861, 2 S., i, 667-672
Harris	1 yr. and 10 mos.	Sarcoma and endothelioma	Recovery; twisted pedicle	Amer. Jour. Obstet., October, 1904
Pick	2 yrs.	Spindle-cell sarcoma	Vagina and all pelvic organs infiltrated	Arch. f. Gynäk.,1894, xlvi, p. 592
Gibb	2½ yrs.	Cystic sarcoma	....	Glasgow Med. Jour., lx, No. 1, p. 33
Evers	2½ yrs.	Sarcoma	....	St. Louis Courier of Med., August, 1884
Hoffman	2 yrs. 9 mos.	Sarcoma	Death	Amer. Jour. Obstet., xxxvi
Cameron	3 yrs. 6 mos.	Sarcoma	Death	Glasgow Med. Jour., 1889
Smith, F. C.	3 yrs.	Myxosarcoma	Recovery; vaginal and uterine polyps, uterine subperitoneal growth. This case also appears in Table II	Ibid
Schwartz	4 yrs.	Adenocystoma	Recovery	Arch. f. Gyn., xiii, 4
Foerster	4 yrs. 6 mos.	Sarcoma	Death	Amer. Jour. Obstet., xxxi
Byford	4 yrs. 8 mos.	Sarcoma	Recovery	Chicago Med. Rec., 1891-2, ii
Weil	5 yrs.	Adenocarcinoma	Operation; recovery. Tumor size of a cocoanut; removed with tube; no hemorrhage; alive and well at time of report	Johns Hopkins Hospital Bull., March, 1905, xvi, No. 168
Demme	5 yrs.	Congenital fibrosarcoma	....	Jahrsb. des Jernnerschen Kinder spetales ze Berne, 1881
Turner	6 yrs.	Medullary sarcoma of both ovaries and of peritoneum	Death	Trans. Path. Soc., London, 1892-3, xliv, 110
Page	6 yrs.	Sarcoma	Recovery	Lancet, December, 1895
Parry	7 yrs.	Carcinoma	Death	Lancet, 1907, ii, 1607
Croom	7 yrs.	Sarcoma	Recovery; last report two years later; still well. Croom considers premature sexual development in relation to ovarian tumors	Edin. Med. and Surg. Jour., 1893, p. 689
Olshausen	8 yrs.	Carcinoma	Autopsy; no operation	Weil, Ibid
Stolypinsky	8 yrs.	Carcinoma	Result not stated	Rev. de gyne. de chir. abdom., viii, 708
Gussenbauer	8 yrs.	Carcinoma	Recovery	Wien. med. Woch., 1894, No. 41
Sharp, W. H.	8 yrs.	Cystic encephaloid	Not stated	N. Y. Med. Jour., 1874, xix, 52-54
Chenoweth	8 yrs.	Sarcoma	Recovery	Amer. Jour. Obstet., xv
Malius	9 yrs.	Cystosarcoma	Death	Lancet, 1890, i, 1174
Forbes	9 yrs.	Myxosarcoma	Recovery	Australian Med. Jour. Melbourne, 1894, xvi
Leopold	9 yrs.	Carcinoma	Death	Centralblatt f. Gynäkologie, 1894, xviii
Palmer	9 yrs.	Cancer	....	Trans. Med. Soc., Dist. Columbia
McBurney	10 yrs.	Sarcoma	Recovery	Annals Surg., 1895, xxi, 706
Wagner	10 yrs.	Sarcoma	Recovery	Arch. f. klin. Chir., xxx, 704
Croom	11 yrs.	Sarcoma	Recovery	Obstet. Trans. Edin., xiv, 93

Reporter	Age	Tumor	Remarks	Reference
Edwards, Wm. A.	11 yrs.	Sarcoma	Recovery; child made excellent operative recovery; died in six weeks from general metastasis	Present communication
Kelly, H. A.	12 yrs.	Sarcoma	Perfect recovery; tumor large enough to fill a hat; died 2 years later from dysentery	Cyclop. Dis. of Children, Keating and Edwards, iii, 739
Eckhardt	13 yrs.	Sarcoma	Recovery; double oöphorectomy as opposite ovary was cystic; 1½ years later showed no recurrence	Deut. med. Woch., 1895, S. 96
Bode	13 yrs.	Sarcoma	Recovery; tumor filled entire abdomen; grew under sheath of abdominal muscles	Central. f. Gyn., Bd. xviii, 1171
Anderson	13 yrs.	Sarcoma	Recovery; died in few months from recurrence	Bland Suttou., Diseases of Tubes and Ovaries
Marien	13 yrs.	Sarco-epithéliome	....	Univ. Méd. du Canada, Montreal, 1908, xxxvii, 317-320
Joüon	13 yrs.	Tumeur maligne de l'ovaire	Recovery	Gaz. med. de Nantes, 1907, 2. S., xxv, 17
Smith	13 yrs.	Carcinoma	Death; both ovaries diseased	Lancet, 1874, ii, 501
Gage	15½ yrs.	Sarcoma	Recovery; tumor filled abdomen and very adherent	Jour. Amer. Med. Assoc., December, 1894
Thornton	15 yrs.	Carcinoma	Death	Med. Times and Gaz., 1883, i, 211.
Von Szabo	15 yrs.	Carcinoma	Death; hemorrhage into abdominal walls and intestinal adhesions	Arch. f. Gyn. Bd. xxxii, S. 193
Michel	16 yrs.	Carcinoma	Recovery; died in 2 years from recurrence; growth size of man's head removed at operation; autopsy, large tumor on left side of abdomen; metastasis to liver and kidneys; microscope showed that the tumor had a chorionepithelioma-like structure	Zentralbl. f. Gynäk., 1905, No. 14; Amer. Med., August 26, 1905, p. 377
Homans	17 yrs.	Sarcoma of pelvic organs, omentum and mesentery	Died of shock in three hours; about 13 pounds of encephaloid cancer removed	384 Laparotomies for Ovarian Disease; Sawyer & Sons, Boston, 1887
Binaud	17 yrs.	Primary (large) cancer of ovary	Perfect recovery; cancer was very voluminous(3 lb. 7,oz.) with ascites; a perfect cure by ovariotomy	Jour. med. de Bordeaux, 1894, xiv., 345
Donhauser	Children	Malignant ovarian tumor	....	Albany med. Ann., 1906, xxvii, 20–30
Mo. G.	Child, age not stated	Sarcoma	Death	Osservatore, Torino, 1876, xii, 84
Fenemenow	Child, age not stated	Sarcoma	Death	Rev. de gyn. et de chir. abdominale, 1904, viii, 708
Piwowarski	Child,	Malignant ovarian tumor	The author considers this to be a rare tumor	Ueber einen seltinen Fall von malignen Ovarialtumor bie einen Kinde, Berlin, 1905, xliv, 8
Brown	Child, age not stated	Encephaloid of ovary.	....	Lancet, 1858, i, 456
Amann	Child, age not stated	,Carcinoma	Exploratory incision	Weil, Ibid

TABLE II.—Malignant Disease of the Uterus in Children.

Reporter	Age	Tumor	Remarks	Reference
Hollander	9 mos.	Sarcoma of uterus and vagina	Total extirpation; discharged from hospital in 1 month, cured	Deut. med. Woch., 1896, xxii, 16
Curtis	12 mos.	Sarcoma of cervix and vaginal vault	Operation; death following day	Trans. Obstet. Soc., London, 1904, xlv, 320
Findley	18 mos. first noticed	Primary, small spindle-cell sarcoma of cervix	First noticed on anterior lip of cervix; removed; in 6 weeks return; in 3 months another operation; child died in fourth year of life; whole pelvis filled with mass	Surg., Gynec. and Obstet., Chicago, 1906, iii, No. 4, p. 501
Rosenstein	2 yrs.	Carcinosarcoma	Died	Arch. f. path. Anat., Berlin, 1883, xcii, 191
Steffen	From 5 mos. to 2 yrs.	Eight cases; 3 sarcoma of uterus; 2 carcinoma of uterus; 3 sarcoma of uterus and vagina	All the sarcomas were considered to be congenital; Steffen says that benign congenital tumors are known to become malignant after attempt at radical removal	Die Malignen Geschwülste in Kindesalter, 1905
Virchow's Arch.	Less than 2 yrs.	Primary sarcoma of fundus uteri; extensive in bladder	Death from cachexia	Virchow's Arch., Bd. xcii, 1
Pick, L	2 yrs.	Primary carcinoma of cervix	Polyp in vagina; secondary large growth in abdomen; death due to chronic peritonitis	Arch. f. Gyn., Bd. xlvii, 1
Laidley	2 yrs. and 6 mos.	Carcinoma; postmortem and microscopic diagnosis	Death	St. Louis Courier of Med., Sajou's Annual, 1891, F. 34, vol. ii
Smith, F. C.	3 yrs.	Small round-cell myxosarcoma of uterus	Subperitoneal uterine growths; vaginal polyp; death in 33 days after removal of vaginal growth	Amer. Jour. Obstet., 1883, xvi, 555–6
Ahlfeld	3 yrs. and 6 mos.	Sarcoma probably primary in vagina; a large tumor was attached to the fundus uteri and occupied the entire cavity of the uterus	Posterior wall of bladder involved	Arch. f. Gyn., Band xiv, 1
Depage	3 yrs. and 6 mos.	Primary sarcoma of uterus; microscopic diagnosis	First operation for cervical fibroid; growth recurred in 6 months; vaginal hysterectomy; in 6 weeks entire pelvis involved; death	Central. f. Kinderheilk., 1902, Bd. vii, S. 103
Markovic	5 yrs.	Large sarcoma of posterior wall of uterus	Death	Liecnieki, 1901, xxiii, ii, 426
Gynghofner	8 yrs.	Anterior lip of cervix growth size of a hazel nut; medullary carcinoma	Almost continuous hemorrhages from genital tract for 2 or 3 years; died	Ztsch. f. Heilk. Prag., 1888, Band ix, 4–5 S. 337, 1 pt
Homans, J.	10 yrs.	Cancer of abdominal organs	Recovered from operation; died 9 months later	Laparotomies for Various Diseases, Sawyer & Sons, Boston, 1887
Bluhm	11 yrs.	Sarcoma; cervical polyp		Arch. f. Gyn., Band lxviii, Heft 62
Agnus Bluhin	11 yrs.	Sarcoma botryoides mucosacervicis	Operation; recovery	Med. Woch., iv, 21, No. 175, Mai 25
Zweifel	13 yrs.	Round-cell sarcoma of uterus	Death	Cent. f. Gyn., 1884, Band viii, S. 401
Von Konig	13 yrs.	Krebsbildung	Died	Allg. Wien. Med. Ztg., 1885, xxx, 280
Wells	13 yrs.	Cancer of body of uterus; extension to bladder	Menses suppressed for 8 months, then uterine hemorrhage which persisted until death	Findley, Surg., Gyn., and Obstet., Chicago, 1906, iii, 502

Reporter	Age	Tumor	Remarks	Reference
Little	14 yrs.	Carcinoma of cervix uteri		New Orleans Med. and Surg. Jour., 1896-7, xlix, 322
Jaeger	15 yrs.	Fibrosarcoma of uterus		Central States Med. Monit., Indianap., 1906, ix, 754
Bractz	18 yrs.	Tumor of posterior lip of cervix, 2 cm. in diameter	Kaltenbach removed the uterus by vagina; girl died in 4 weeks; no autopsy; growth was thought to be an endothelioma	Arch. f. Gynäk, Bd. ii, 1896
Coppée	18 yrs.	Encephaloid cancer of rapid growth	Death	Bull. soc. de méd. Gand., 1864, xxxi, 35-39
Tschop	19 yrs.	Carcinoma; microscopic studies	Vaginal hysterectomy; full recovery; vagina and adnexa not infiltrated	Central. f. Gynäk., 1897, No. 2
Pick, L.	Children	Sarcoma of uterus and vagina		Ueber Sarcome des Uterus und der Vagina in Kindersalter und des Primäre Scheidensarcoma des Erwachsenen; Arch. f. Gynk., Berlin, 1894, xlvi., 191-255
Odebrecht	Young, age not stated	Sarcomatous degeneration of a uterine myoma	Recovered	Zent. f. Gynäk., 1904, No. 2
Chase	Young, age not stated	Sarcoma of uterus and ovaries	Mixed toxin treatment	Brooklyn Med. Jour., 1896, x, 442
Marsh	Child	Sarcoma of uterus	Vagina and rectum involved	Findley; Surg., Gyn. and Obstet., Chicago, 1906, iii, 502

indeed, the growth may be so slow that their presence may not be manifested until adult life is reached. In the meantime the ovary will functionate normally. Ovarian cysts, on the other hand, are brought to us while the child is still quite young; it may be as young as three months. Malignant disease of the organs develops very rapidly in the child, and is likely to be accompanied by ascitic fluid; but my experience is that the general health does not become involved as early as we would suppose. Most writers say that it is characterized by early marked affection of the general health. This is certainly not so in my cases. The children with malignant abdominal growth were brought to me because their parents recognized the abdominal enlargement, and not because the child's symptoms were exacting, although in two instances the growths were very large. Of course, later the symptoms are those common to all malignant growths, whether in child or adult.

Sarcoma is the most frequent growth found in the child's ovary. Most of the congenital growths are sarcomas, and they have a strong histological resemblance to embryonic ovarian stroma. Most of those in infancy and childhood are made up of small round cells. The other varieties described in children are: Spindle-cell sarcoma, lymphangioma, endothelioma, and fibrosarcoma.

Emanuel's[29] case of tumor of the left ovary, in a fifteen-year-old girl, contained tissue elements of endo-, ecto-, and mesoderm, but its stroma was sarcomatous. The child made an excellent operative recovery, but died four months later from recurrence.

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[29] Zeit. f. Geb. u. Gyn., Band xxv.

The prognosis of malignant growths of the ovary at the present time is rather appalling. This is due, however, to the fact that the cases are not submitted early enough to radical removal of the incipient growth. The age of the child has little to do with it; very young children have recovered from abdominal operations of all sorts. I agree with Baginsky that the prognosis becomes better day by day as the technique of operations in this region progresses; as a writer has said, the age of the patient does not, as one would suppose, contribute any valid reason for refusing to operate; and, as Kelly says, on account of the large percentage of malignant tumors in children and the consequent dangers of delay, the operation should be performed as soon as the patient can be suitably prepared for it. Henning recognized twenty-seven years ago the advantage of early operation in children.

If the tumor is a dermoid or cyst the prognosis is extremely good, even at the most early age of infancy; but if it is sarcoma or carcinoma the operative prognosis at the present time is appalling and the chances of non-recurrence are remote. Thus, of Sutton's 21 cases of ovarian sarcoma, 11 died within a year after their operations, a mortality of 52.4 per cent. The mortality in cysts will be about 8 per cent., in dermoids, between 13 and 21 per cent.; and in solid tumors (malignant), between 33 and 52 per cent. The literature, however, contains a number of examples in which the children survived for years and were well when last heard from. Bode's[30] case of a girl, aged thirteen years, with large round-celled sarcoma of the right ovary, growing under the sheath of the abdominal muscles, was in perfect health four years after its removal. Gage[31] removed a two and one-half pound, round-cell sarcoma from a fifteen-year-old girl, who five years afterward was well and married. Kelly's patient with ovarian sarcoma, aged twelve years, lived two years after operation and died from dysentery, without return of growth. Harris's case of twenty-two months of age recurred, as did Byford's, aged four years and eight months, Page's,[32] a six-year-old girl, Croom's,[33] a seven-year-old girl, Forbes'[34] at nine years, McBurney's[35] at ten years, and Wagner's[36] at ten years. The record in carcinoma in children is most unsatisfactory, with here and there a gleam of hope. Redner's case, a nine-year-old child, died one year later from recurrence. She made a good operative recovery. One of this operator's cases in a child was well four years after the removal of the ovary; another of the children died in three months from recurrence. Homan's[37] case, aged ten years, of cancer of the abdominal organ recovered nicely from the operation, but died nine months afterward from recurrence. Michel lost a case in a sixteen-year-old girl two years after operation from recurrence in the liver and kidneys. Weil's case of adenocarcinoma of the ovary at five years of age was well at the last report, March, 1905.

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[30] Central. f. Gyn., Band xviii, S. 1171.

[31] Jour. Amer. Med. Assoc., December, 1894.

[32] Edin. Med. and Surg. Jour., 1893, p. 689.

[33] Annals of Surgery, 1895, xxi, 706.

[34] Lancet, December, 1895.

[35] Australian Med. Jour., 1894, xvi.

[36] Arch. f. klin. Chir., xxx, 704.

In true carcinoma of the uterus in children our therapeutic measures are as yet of little avail. Rosenstein's[38] case, aged two years, classed as a carcinosarcoma of the uterus, died fourteen days after operation. Ganghofner's girl, aged eight years, with a uterus 2.6 cm. long, containing a cancerous tumor the size of a crown piece, died from an intercurrent variola. Blum's[39] case, aged eleven years, with sarcoma of the cervix, died from recurrence. Agnus Bluhin's[40] case of sarcoma botryoides cervicis in an eleven-year-old girl recovered. Bradford's[41] case, a girl aged nine years with papillary cystoma, the size of the head of a full-term fœtus, was well three months after a complete hysterectomy. Odebrecht's[42] case in a young girl (age not stated), with sarcomatous degeneration of a uterine myoma recovered after operation. Worrall's[43] case of adenoma of the uterus and double ovarian tumor recovered completely. I do not know the termination of Little's[44] case of carcinoma of the cervix uteri in a fourteen-year-old girl, but imagine it too was fatal.

Of the greatest interest are the cases of chorio-epithelioma in children, the so-called deciduoma metastica malignum of Sänger. Schlangenhofer, of Vienna, in 1902, reported one in a virgin, aged thirteen years, who had never menstruated; Ahlfeld[45] one at seventeen years of age; and Champneys[46] one at eighteen years; while Brock's[47] case was a mole passed by a girl twelve and one-half years old. It has been aptly said that a mother fatally invaded by the trophoblast of her own child would be a person of one generation killed by a tumor belonging to a person of the next generation—a matricide; but these little girls slain by an embryoma in their own uterus are the victims of a potential brother or sister, not of their own child. It is now a fratricide.

For purposes of illustration I will detail the notes of but one case of malignant disease of the ovary.

A. B., aged eleven years, was brought to me on May 20 by her father, because he noticed a reluctance on the child's part to go through the "setting up" exercises which it was the custom of the other children to do every morning. This child said it gave her an uncomfortable sensation to stoop forward and touch the floor with her hands. This was the only symptom that she complained of. There is absolutely nothing of interest in the previous history of the child or in the family history. The mother thought the child's waist measure was increasing. Examination at this time showed a large tumor occupying the right iliac, lumbar, and hypogastric region to the line of the umbilicus. The tumor mass was rather movable. It was readily outlined and was apparently extrapelvic; that is, it did not seem to have a pelvic origin; its physical signs were rather those of kidney enlargement, but the urine was absolutely normal and remained so. The inguinal, axillary, and cervical glands were not enlarged. The mammæ were normal and the pubic hair was not developed. The edge of the tumor was easily outlined.

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[37] Three Hundred and Eighty-four Laparotomies for Various Diseases, 1887.

[38] Arch. f. path. Anat., 1883, xcii, 191.

[39] Arch. f. Gyn., Band lxviii, Heft 62.

[40] See table.

[41] Arch. Pediat., 1892, ix, 508.

[42] Zent. f. Gynäk., 1904, No. 2.

[43] Australasian Med. Gaz., Sydney, 1893, xii, 308.

[44] New Orleans Med. and Surg. Jour., 1896–97, p. 322.

[45] Monatsschr. f. Geb. u. Gyn., 1895, i.

[46] London Pract., January, 1896.

[47] Stone, Chorio-epithelioma, Amer. Jour. Obst., October, 1907.

In a few days (May 24) the temperature became slightly elevated and irregular, ranging between 99.3° and 100° F. This continued up to the time of operation, the temperature occasionally but rarely below the normal. This fall might occur in the morning or the evening; its time of elevation was irregular also. The highest temperature recorded from the first observation, May 20, to the date of operation, June 18, was 101.2°, which occurred on May 27, and seemed to be due to an intestinal toxemia. The lowest temperature was 98.2° F. During the pre-operative period of observation, extending over twenty-nine days, the child not only did not lose weight, but gained one pound between May 24 and June 7.

Operation: Right salpingo-oöphorectomy, with the coöperation of Drs. Lasher, Dunbar, Magee, and Parsons; ether was used and 65 grams was administered. The operation consumed thirty-eight minutes and the anesthesia forty-five minutes. Median incision. The growth was found to be a large sarcoma of the right ovary. A portion of it was wedged tightly between the uterus and the bladder, the adhesions being very intimate, but easily broken up. There was some free hemorrhage. The major portion of the growth was above the brim of the pelvis and occupied about the site of an enlarged kidney; its contour was not unlike that organ. The portion that extended out of the pelvis was pedunculated. The uterus was not enlarged. There was no evidence of metastasis at the time of operation. The child was shocked somewhat during the removal of the growth, but readily responded to the usual methods of combating such a condition.

The child had an absolutely uneventful convalescence, suffered little pain, and speedily arose from bed. Within a month a return of the growth was noted in the abdomen, and in six weeks the child succumbed to what seemed to be the most extensive involvement of the organs in the abdomen that I have ever seen. At the postmortem, metastasis was seen to be universal; no structure seemed to have escaped its invasion.

Primary tumors in the vagina are rare at all ages; they are usually fibroma, fibromyoma, myoma, sarcoma, or carcinoma. All except the last two are very rare in children, and these even are of very infrequent occurrence. Sarcoma of the vagina, however, is more frequent in children than in adults; in one of the series in the literature, that of Starfinger, of 26 cases, 24 were in children under five years of age; indeed, 10 were under one year of age. Malignant disease of the vulva and vagina constitutes but 1 per cent. of all malignant disease of the genital tract at all ages. The growths may apparently be congenital or appear early in life, before the fifth year, many, in fact, before the first year. They may develop from the walls of Gärtner's canals or from an obliterated Müller's duct. Primary sarcoma of the vagina is the most frequent malignant growth in childhood and is a specialized form of malignant disease which may affect any or all of the connective tissues which are involved in the complicated developmental processes associated with the formation of cloaca. Sarcoma of the vagina in childhood is usually microscopically the characteristic structure of racemose sarcomas. Striated muscle fibers are sometimes seen in the primary tumor, the secondary growths, and in the metastases, fibers which Piquand[48] says resemble the striated muscle found in a three-months' fœtus. The sarcoma usually grows in the connective tissue of the pelvic organs, and may extend in all directions, into the uterus, vagina, bladder, and urethra. In some cases it may remain circumscribed in the vagina; its usual clinical form, however, is that of a polyp, either vaginal or uterine, often both.

In children vaginal sarcoma shows very distinctly this tendency to become pedunculated, polypoid, and multiple. It pursues a comparatively slow growth and ulcerates very slowly, if at all; the lymphatic glands are affected, if at all, late in the case, and in consequence it dissiminates very slowly. The growth may be so slow that Herndon,[49] who has written a most valuable article on the pathology of the reproductive organs, thinks that the tumors that were not observed until the sixth and fifteenth years, respectively, are probably congenital, but do not show active growth until this later period.

There is usually little trouble in making the diagnosis, but unfortunately the general practitioner is apt to look upon the polyps as benign growths, and the diagnosis is then not made until it is too late to remove the entire growth. The prognosis at best is grave, but recently some happy results have been reported, cures lasting for several years (see Table III), as much as ten in one instance, without recurrence, the children then passing from observation. Unfortunately, however, recurrence and speedy recurrence is still the rule, and the children die early from malignant toxemia or from pressure on the bladder and rectum and absorption toxemia.

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[48] Sarcoma of the Uterus, Rev. de gyn., 1905, ix, 579.

[49] Kelly and Noble, Gynecological and Abdominal Surgery, i, 98.

TABLE III.—Malignant Disease of the Vagina in Children.

Reporter	Age	Tumor	Remarks	Reference
Heckford	2 mos.	Vaginal and vulval villous tumor, "medullary"	....	Trans. Obstet. Soc., 1868, x, 224
Hauser	6 mos.	Vaginal tumors; multiple; anterior vaginal wall	Round and spindle-cells and striped muscle fibres; operation; recurrence at short intervals; death	Virchow's Archiv., Bd. lxxxviii, S. 168
Rabe	6 mos.	Tumor size of small nut at site of vestibule; involved urinary meatus; sarcoma	Removal of uterus and vagina by laporotomy; death from bronchopneumonia	Surgeon General's Catalogue, Holmes, Pediatrics, 1907, xix, No. 2, 99
Frick	7 mos.	Right anterior vaginal wall; round and spindle-cell sarcoma	Operation; rapid recurrence and death	Surgeon General's Library, Holmes, Ibid
Schuchardt	7 mos.	Vaginal tumor	Mixed-cell sarcoma; operated on by Volkman; at report cure had lasted 10 years	Verhandl. der Deut. Gesellsch. f. Gynäk. 1868, Bd., ii, S. 239
Hollander	9 mos.	Vaginal polyp; large	Posterior wall of uterus also involved; spindle and round-cell sarcoma; operative cure by Israel	Deut. med. Woch., Vereins Beilage, 1876, xxii
Johannersen, A.	11 mos.	Sarcoma	Whole pelvis involved	Jahrb. f. Kinderh., 1897, N. F. xliv, 114–122
Kolisko	12 mos.	Left vaginal wall, number of large and small polyps; round and spindle-cell sarcoma	Repeated operation, with rapid recurrence after each; death 6 months after first noticed from pyometritis and suppurative peritonitis	Wien. klin. Woch., 1889, ii, 109, 130, 159, 182, 202, 222; Kolisko abstracts twelve other cases from the literature and thinks that early and radical extirpation of primary tumor justifies hope for successful issue
Weinlechner	12 mos.	Vaginal polyps: sarcoma	....	Wien. klin. Woch., 1889, S. 109
Holmes, O. L.	17 mos.	Round-cell sarcoma; anterior vaginal wall	Three incomplete operations; death due to uremia and septicemia	Trans. Med. Assoc., Georgia, Atlanta, 1906, 304–311; Pediatrics, N. Y., 1907, xix, 95–100
Starfinger	18 mos.	Large round and spindle-cell sarcoma posterior vaginal wall	Removal by curette; death in 3 weeks; duration of disease 6 months	Steinthal, Virchow's Archives, Bd. iii, S. 449
Thomas	18 mos.	Tumor of left labium majus; sarcoma	....	Amer. Jour. Obstet., vii, 51
Strassman	18 mos.	Patly gangrenous tumor protruding from vagina; large round and spindle cell sarcoma	Hemorrhage and foul discharge from vagina for 4 months; curretted and tanponned with gauze; result not stated but suggests to remove vagina and uterus per sacrum	Library Surgeon-General's Office, Holmes, Ibid.
Billroth	18 mos.	Fibrosarcoma; warty growth in vagina and bladder	Vesicovaginal septum infiltrated	Wien. klin. Woch., 1889, No. 8, S. 159
Pick	24 mos.	Vaginal tumor; spindle-cell sarcoma	Infiltrating pelvic organs	Arch. f. Gynäk., Bd., 1894, xlvi, 192
Frick	24 mos.	Tumor originated on posterior vaginal wall near vaginal entrance; cylindrical; round and spindle cell sarcoma	Operation; recurrence; sacral operation; tumor same character; recovered and well 3 years after second operation	Holmes, Pediatrics, N. Y., 1907, xix, No. 2
Korner	24 mos.	Vaginal polyps; vesicovaginal septum infiltrated	Fibrosarcoma	Archiv. f. Gynäk., Bd., 1894, xlvi, S. 220, quoted by Pick, Ibid.
Marsh	24 mos.	Polyps in vagina and bladder; vesicovaginal septum infiltrated	Small round-cell sarcoma	Trans. Path. Soc., 1874, xxv, 178

Reporter	Age	Tumor	Remarks	Reference
Power	2 yrs. and 4 mos.	Tumor of right wall of vagina; round-cell sarcoma; large portion are fibrosarcoma and myxosarcoma	Admitted to hospital for retention of urine caused by swelling of vagina said to have followed measles 14 months previously; 5 months before admittance polyps noticed in vagina; died of uremia	St. Bartholomew's Hospital reports, xxxi, 121-135; Trans. Path. Soc., xlvii
Schuchardt	2 yrs. and 6 mos.	Vaginal polyp; mixed-cell sarcoma; round and spindle-cells	Some pain and hemorrhage; tumor removed; recurred in 7 months; removed; no recurrence when case was reported	Verhandl. der Deut. Gesellsch f. Gynäk., Bd., 1888, ii. S. 239
Lee	2 yrs. and 6 mos.	Vaginal polyps; vaginal and urethral entrance involved; rectovaginal and vesicovaginal walls involved	Sarcoma; elastic tumor felt in abdomen reaching to umbilicus; died 13 months after first seen	Holmes, Ibid.
Kolisko	18 mos.	Myofibrosarcoma; tumor protruded from vulva for one month before admittance to hospital	No symptoms for 2 weeks; vagina very long; removed tumor, but vagina soon filled again; death; autopsy; origin in anterior vaginal wall; grew to size of walnut in 6 weeks	Wien. klin. Woch., 1889, ii; child was admitted to Billroth's Clinic in 1875 and I think it is the same case as the one that immediately proceeds it in this table.
Kolisko	18 mos.	Polyps; vaginal sarcoma	Died 2 weeks after admission to hospital; autopsy; nodular tumor of vestibule infiltrating vagina, urethra base of bladder and cervix; cystitis, pyelitis, pyelonephritis and pyometra	Ibid.
Weinlechner	18 mos.	Vaginal polyps; myofibrosarcoma	Bladder, cervix and urethra involved	Wien. klin. Woch., 1889, S. 109
Wrede	21 mos.	Cauliflower growth in vagina; round and spindle-cell sarcoma	Removed by ligation; recovered in 2 weeks; repeated operation and recurrences; cystitis, continued fever; death	Holmes, Ibid.
Steinthal	24 mos.	Vaginal tumor; round-cell sarcoma; anterior vaginal wall	Myxosarcoma; duration of disease 12 months; tumor removed after 8 months' duration; recovered in 8 weeks; death in 6 months from uremia	Virchow's Archiv., Bd. iii, S. 449
Piechand, and Guyot	24 mos.	Vaginal tumor on posterior wall; sarcoma	Serious hemorrhage; inoperable on account of size; uterus not involved general suppurating peritonitis cause of death	Holmes, Ibid.
Soltman	2 yrs. and 6 mos.	Vaginal and bladder polyps	Round-cell sarcoma in vagina; spindle-cell in bladder	Jahrb. f. Kinderheilk., Bd. xvi., S. 418
Kelly, H. A.	2 yrs. and 6 mos.	Rhabdomyosarcoma	Death due directly to urinary obstruction	Gynecology and Abdominal Surgery Kelly and Noble, 1907, i, 820
Sathman	2 yrs. and 6 mos.	Anterior vaginal wall and polyps protruding from vagina; round-cell sarcoma	Posterior wall of bladder involved; painful urination; intermittent fever; hemorrhage	Hesterman, Holmes, Ibid.
March	2 yrs. and 7 mos.	Tumor on anterior vaginal wall; polyp	Metastasis on posterior wall of bladder; course of disease 6 months; operation; seven recurrences; death	Hesterman, Holmes, Ibid.

Reporter	Age	Tumor	Remarks	Reference
Marshall	2 yrs. and 7 mos.	Vagina	....	Brit. Med. Jour., 1889, i, 27
Sänger	2 yrs. and 8 mos.	Polypoid masses in vagina; round-cell sarcoma	Bladder, broad ligaments, deep lumbar glands infiltrated; recurrence in 2 months; death; autopsy; ascites, suppurative peritonitis; large sarcoma; anterior vaginal wall; isolated polyps posterior wall perforating abdominal cavity; dilatation of bladder and ureters	Arch. f. Gynäk., Bd. xvi, S. 58
Brown	3 yrs.	Vaginal sarcoma	....	Obstet. Soc. of Baltimore, Holmes, Ibid.
Smith, T. C.	3 yrs.	Vaginal and uterine polyps	Myxosarcoma; uterine subperitoneal growths	Amer. Jour. Obstet., 1883, xvi, 555-668; Ibid., 1893, xxvii, 577; when this case was first reported in 1883 it was erroneously considered to be the first case on record
Ahlfeld	3 yrs. and 6 mos.	Vaginal polyps	Fibrosarcoma filling pelvis; inguinal glands enlarged	Arch. f. Heilkunde, Bd., 1867, xvi, S. 135
Schustler	4 yrs.	Vaginal polyps; vesicovaginal septum involved	Myxosarcoma	Wien. klin. Woch., 1888, SS. 148, 225
Demme	5 yrs. and 6 mos.	Vaginal polyps	Fibrosarcoma	Pick (quotes in) Arch. f. Gynäk., xlvi, S. 218
Demme-Gränchier	6 yrs.	Sarcoma	At birth a pea-sized nodule; active malignant growth at 6 years	Gränchier Inaug. Dis. München, 1888
Power, D. A.	Child	Primary sarcoma vagina	....	Brit. Med. Jour., 1895, ii, 973
Power, D. A.	Children	Primary sarcoma of vagina	....	St. Barth. Hosp. Report, London, 1395, xxxi, 121, 135
Rollin, M.	Infant	Sarcoma of vagina	....	Rev. de gynec. et de chir. abd., Paris, 1906, x, 3–20
Peyrache, Jean	Little girl	Malignant tumor of vagina and vulva	....	Des tumeurs maligin de la vulve et du vagin ches la petite fille, Paris, 1905, 101, p. 80
Ward, G. G.	Under 20	Primary epithelioma of the vagina	This seems to be the youngest case on record of primary epithelioma	Contrib. Soc. Med, and Surg. Twenty-fifth Anniv. Founding of N. Y. Post-grad. Med. School and Hosp., N. Y., 1908, 159–166, 1 pt.

As in malignant disease of the ovary, so in similar disease of the vagina, as a rule, the first thing noticed is the tumor; the child's general health is not affected until very late in the disease. The tumor appears between the labia; whereupon the child may complain of some pain, and the evidence of obstruction to urination and defecation will soon become more marked. Another anology is that the nutrition of the child will not be impaired until the disease has progressed to an almost fatal stage; of course, those cases in which the growth early becomes necrotic from pressure will early show the symptoms of septic absorption.

They are said to grow usually from the anterior vaginal wall, but an analysis of the reported cases does not entirely bear out this statement. Carcinoma of the vagina in childhood is still extremely rare. I have elsewhere called attention to Winckel's report of Smith's case of cancer of the rectovaginal wall in a child aged fourteen months; that of Guersant, who saw a carcinoma 20 cm. long and 28 cm. in circumference growing from the introitus of the vagina in a child three and one-half years old. Johannovsky, in the pathological collection at Strasburg, discovered a carcinoma the size of a hen's egg situated in the vaginal vault in a preparation from a girl aged nine years. In the light of present-day knowledge the probability is that these cases classed as carcinoma were sarcoma. Curtis[50] says that there is a case on record of cancer of the vagina in a girl, aged nine years, but he fails to give the reference. Mann has reported two cases between fifteen and twenty years.

Primary epithelioma of the vagina is a disease almost entirely confined to adult life; it is very rare at all ages, and almost unique in childhood. To show the rarity of primary vaginal involvement by cancer it is customary to quote the statistics of W. Roger Williams, who found that of 9226 tumors in the genitalia of women, but 54 were in the vagina. Other statistics bear this out: Reiche, of Hamburg, in 7498 deaths from cancer, found 29 vaginal; Hecht, in 4507 cases, found 50 vaginal. In view of these figures the case of primary epithelioma of the vagina in a patient under twenty years of age, reported by George Gray Ward,[51] becomes of great interest, and will undoubtedly be the cause of further cases being recognized at even earlier periods of life. The girl had never sustained an injury, nor had she been sick at all previous to the discovery of the vaginal growth, which microscopic examination showed to be an infiltrating epithelioma. The growth occurred in the posterior vaginal wall and was inoperable when first seen. It was treated with radium, without result.

The treatment of these forms of malignant vaginal growth is, of course, radically surgical. It must be fully understood that simple excision of the vaginal polyp, the usual early form of vaginal sarcoma in children, or of the more diffuse tumor growth, will inevitably be followed by recurrence sooner or later, usually soon. After thorough and complete removal a number of children have remained free from the growth for many years; indeed, until they have passed from observation. This is true in Schuchardt's report of a cure lasting ten years; and of Hollander's, after extirpation of the entire genital tract of a child aged two years. Power's patient was free from return for three years, and others for a shorter time. All the cases of carcinoma were fatal.

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[50] International Encyclopedia of Surgery, Ashhurst, vii, 293.

[51] Post-Graduate, New York, 1908, vol. xxv.

A CASE OF VIPERINE SNAKE BITE (OF UNDETERMINED KIND) TREATED WITH CALMETTE'S SÉRUM ANTIVÉNIMEUX (OR ANTIVENIN).

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On October 16, 1908, Mrs. McG., aged twenty years, a native of Georgia, but for twelve years past a resident of Florida, was bitten on the flexor aspect of her right forearm at the junction of its upper and middle thirds, while plucking jessamine blossoms from a treelike shrub, her arms being extended and raised so that her hands were as high as her face. She felt the slight blow upon her bare arm, but she was unable to perceive the snake, in spite of somewhat careful search for it. Being accustomed to be circumspect about dangerous reptiles almost all her life, she had examined the ground well before approaching the jessamine tree; but she had been less careful in her inspection of the tree itself, because she believed that poisonous snakes were unlikely to be found in trees.

If the snake were a moccasin (Ankistrodon piscivorus)—as seems to be most probable—almost anyone in the least off-guard would have failed to have seen it, just as she did; for its white buccal surfaces would have been turned straight toward her, and they would readily have been taken for jessamine blossoms. Some of the symptoms suggest also that this was the species of snake concerned; for example, the pain was accompanied throughout with numbness; there was no ecchymosis, but puffiness about the fang-punctures appeared immediately; and swelling, involving the upper two-thirds of the affected forearm and extending almost entirely around it, had developed within one-half hour when I saw her.

I found this forearm was one inch (25 mm.) larger in circumference at its largest part than the other. (I ascertained afterward that in health both forearms were of the same size.) It was almost entirely anesthetic. Some part of each of these manifestations must